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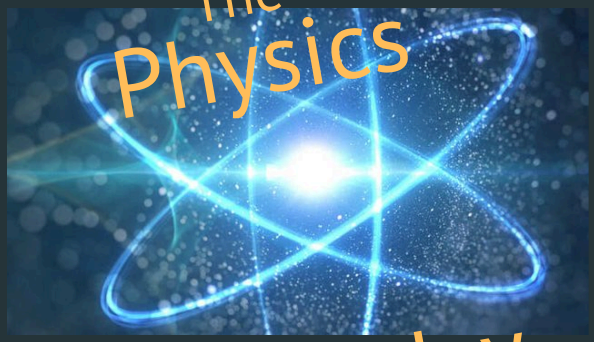
The Physics Of Everyday Objects



A small Interactive Physics Book

Naveenraj - XI A

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Table of Contents

Chapter Name	Page No.:
1. Introduction	1
2. How a bike engine works?	2
3. How a car engine works?	3
4. How an electric engine(car) works?	4
5. How a flight engine works? - I	5
6. How a flight engine works? - II	6
7. Conclusion	7

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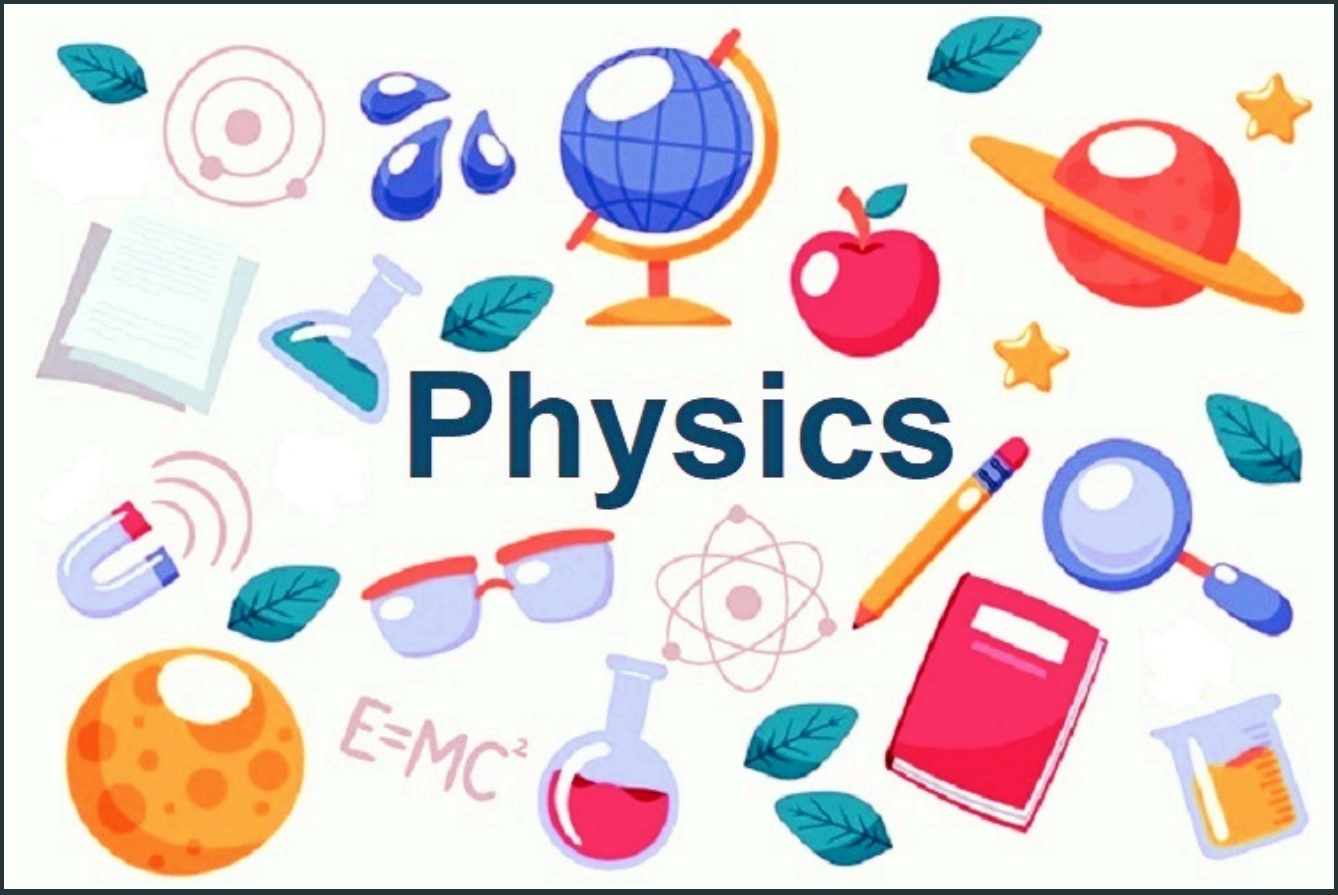
Introduction

- This book was created for a school project in class 11.
- You can find interactive text and images in every page.
- There is a qr code attached in every page which shows the video of that topic.



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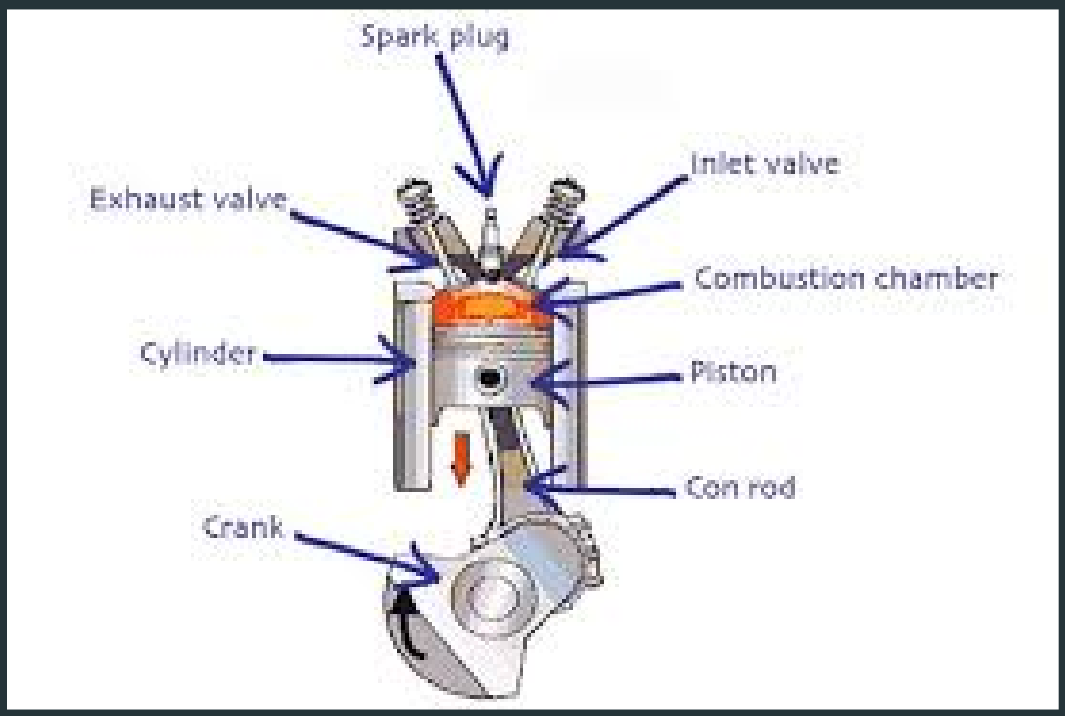
How a bike engine works?

A motorcycle engine generates motion through internal combustion. It mixes fuel and air, compresses them, ignites them with a spark to create controlled explosions, and converts that energy into the spinning motion that turns the bike's rear wheel.

<u>The Four Stroke Cycle:</u>

1. Intake
2. Compression
3. Combustion
4. Exhaust



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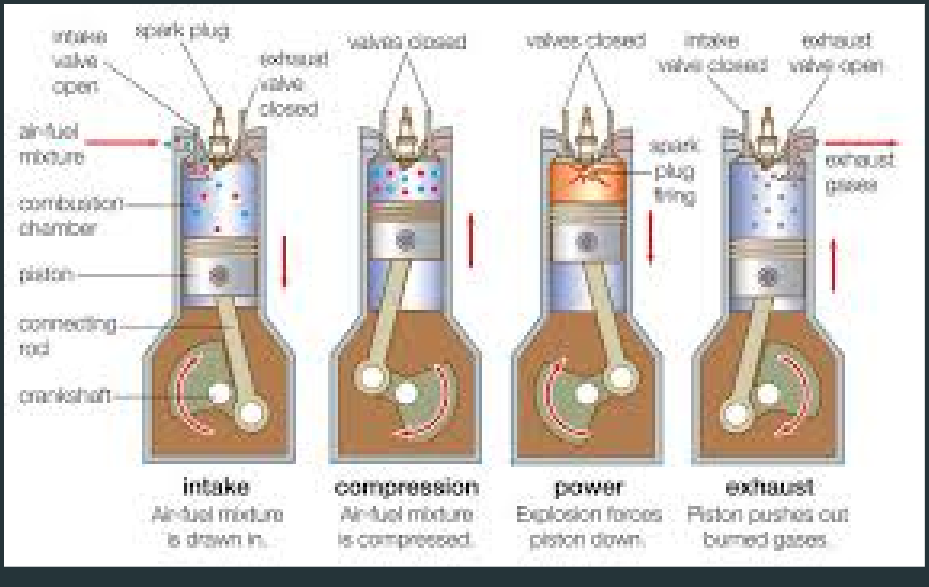
How a car engine works?

Most modern cars use an internal combustion engine that operates on a repeating four-step cycle (intake, compression, combustion and exhaust). This process converts the chemical energy of fuel into mechanical energy, ultimately spinning the wheels to drive the car.

<u>It works on a few key components:</u>

1. Cylinders
2. Pistons
3. Valves
4. Spark Plug
5. Crankshaft



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How an electric engine(car) works?

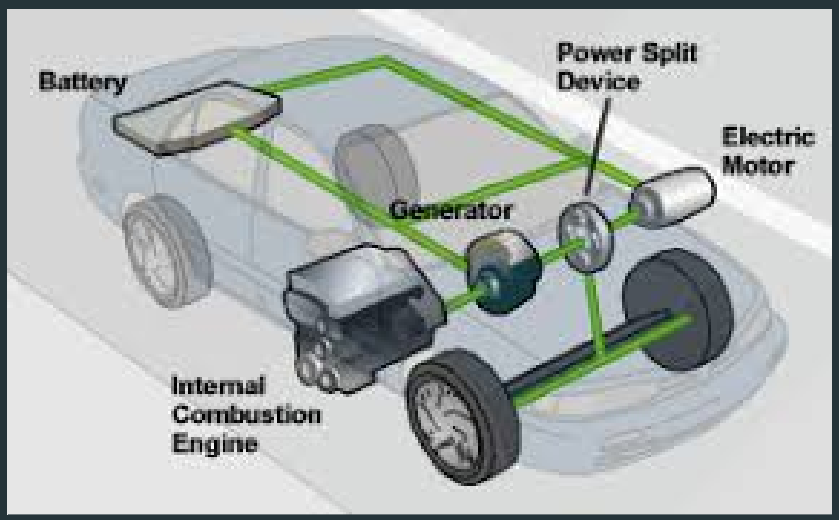
An electric car engine (or motor) works on the principle of electromagnetism. It converts electrical energy from the car's battery into mechanical energy to spin the wheels. Instead of burning fuel, it uses magnets and coils to generate rotational force.

The Main Components:

1. Tracktion Battery Pack
2. Power Inverter
3. Electric Motor

How the Motor creates movement:

1. The Signal
2. Magnetic Fields
3. Rotation
4. Delivering Power



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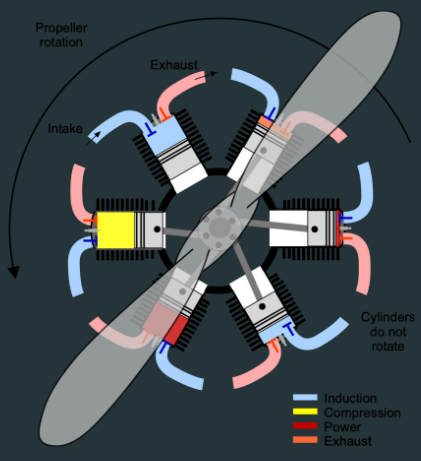
How a flight engine works? - I

A piston flight engine, also known as a reciprocating or "recip" engine, converts burning fuel into rotational movement. This spinning motion turns an aircraft's propeller to generate thrust. Most general aviation aircraft use the four-stroke cycle, commonly referred to as, "intake, compression, power and exhaust".

Piston flight englines are specifically engineered for maximum reliability and weight efficiency, providing, Dual ignition, Air cooling and Altitude compensation.



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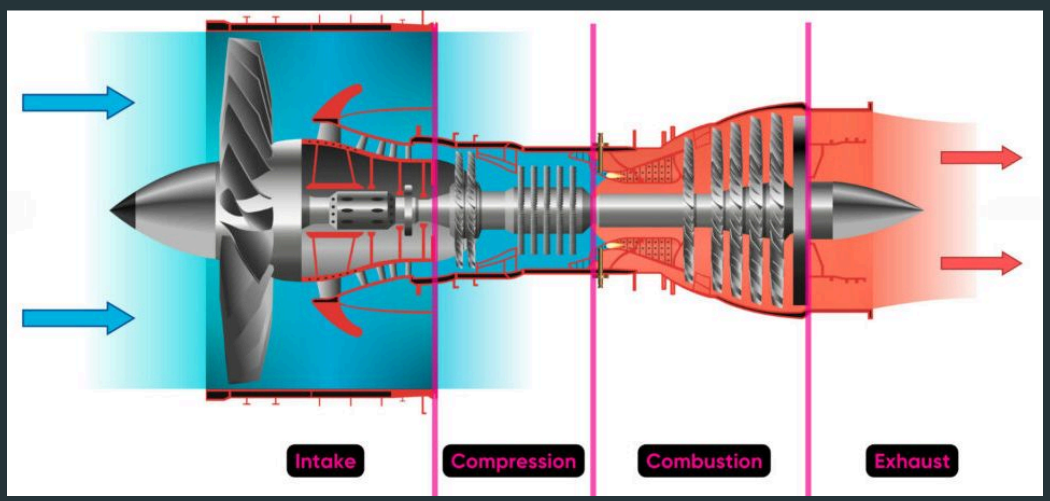
How a flight engine works? - II

Gas turbine engines (or jet engines) in flights propel an aircraft forward by continuously drawing in atmospheric air, compressing it, mixing it with fuel, igniting it, and expelling the high-speed exhaust backward. This continuous reaction creates massive forward thrust based on Newton's third law of motion.

The operation functions in four continuous steps, often referred to as the Brayton Cycle:

1. Intake
2. Compression
3. Combustion
4. Exhaust and Thrust

Subtypes are: Turbofan, Turbojet and Turboprop engines



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Conclusion

Physics is the invisible framework of daily life, transforming abstract laws of motion, energy, and thermodynamics into the familiar tools, comforts, and movements we rely on. . Recognizing these principles bridges the gap between textbook formulas and the tangible world, revealing how science actively shapes every moment.

Key Priciples at Work:

1. Mechanics & Forces
2. Thermodynamics
3. Electromagnetism
4. Optic

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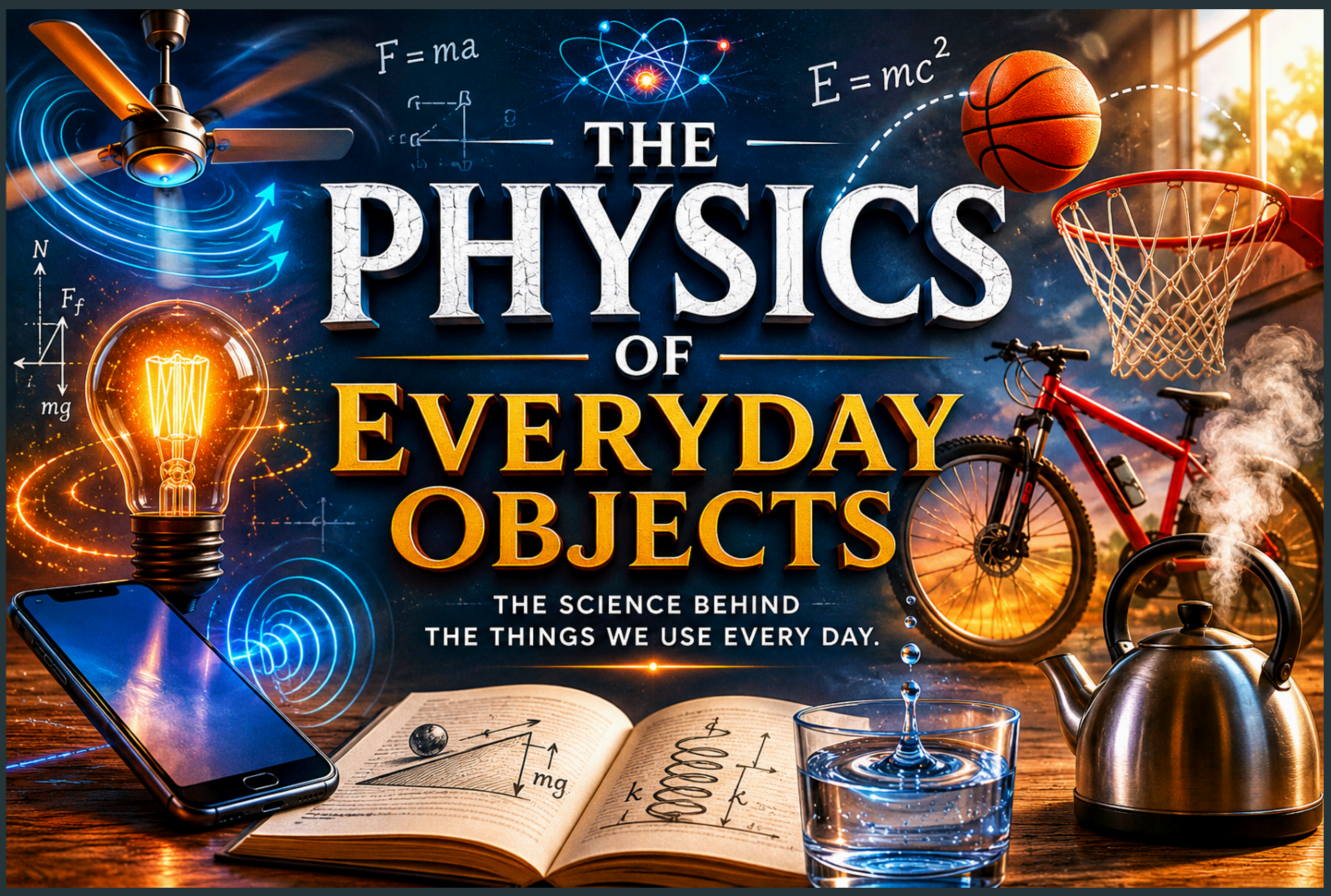
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